A USER'S MANUAL TO THE PMBOK® GUIDE

CYNTHIA SNYDER STACKPOLE

WILEY

PMI® Project Management Institute

A User's Manual to the *PMBOK® Guide*

A User's Manual to the *PMBOK® Guide*

Cynthia Snyder Stackpole

WILEY
John Wiley & Sons, Inc.

PMI®
Project Management Institute

This book is printed on acid-free paper. ♾

Copyright © 2010 by John Wiley & Sons, Inc. All rights reserved

Published by John Wiley & Sons, Inc., Hoboken, New Jersey

Published simultaneously in Canada

No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, scanning, or otherwise, except as permitted under Section 107 or 108 of the 1976 United States Copyright Act, without either the prior written permission of the Publisher, or authorization through payment of the appropriate per-copy fee to the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923, (978) 750-8400, fax (978) 646-8600, or on the web at www.copyright.com. Requests to the Publisher for permission should be addressed to the Permissions Department, John Wiley & Sons, Inc., 111 River Street, Hoboken, NJ 07030, (201) 748-6011, fax (201) 748-6008, or online at www.wiley.com/go/permissions.

Limit of Liability/Disclaimer of Warranty: While the publisher and the author have used their best efforts in preparing this book, they make no representations or warranties with respect to the accuracy or completeness of the contents of this book and specifically disclaim any implied warranties of merchantability or fitness for a particular purpose. No warranty may be created or extended by sales representatives or written sales materials. The advice and strategies contained herein may not be suitable for your situation. You should consult with a professional where appropriate. Neither the publisher nor the author shall be liable for any loss of profit or any other commercial damages, including but not limited to special, incidental, consequential, or other damages.

For general information about our other products and services, please contact our Customer Care Department within the United States at (800) 762-2974, outside the United States at (317) 572-3993 or fax (317) 572-4002.

Wiley also publishes its books in a variety of electronic formats. Some content that appears in print may not be available in electronic books. For more information about Wiley products, visit our web site at www.wiley.com.

Project Management Institute (www.pmi.org) is the leading advocate for the project management profession globally. Founded in 1969, PMI has more than 400,000 members and credential holders in 174 countries. PMI's Project Management Professional (PMP) credential is globally recognized as the gold standard credential in project management

©2010 Project Management Institute, Inc. All rights reserved.

"PMI", the PMI logo, "PMP", "PMBOK" are registered marks of Project Management Institute, Inc. For a comprehensive list of PMI marks, contact the PMI Legal Department.

Library of Congress Cataloging-in-Publication Data:

Stackpole, Cynthia, 1962-

A user's Manual to the PMBOK guide / Cynthia Stackpole.

p. cm.

Includes index.

ISBN 978-0-470-58489-7 (pbk.); ISBN 978-0-470-89009-7 (ebk);

ISBN 978-0-470-89010-3 (ebk); ISBN 978-0-470-89012-7 (ebk)

1. Project management. 2. Project management—Handbooks, manuals, etc. I. Guide to the project management body of knowledge (PMBOK guide) II. Title.

HD69.P75S6894 2010

658.4'04—dc22

2010025380

Printed in the United States of America

10 9 8 7 6 5 4 3 2 1

Contents

Preface **ix**

Acknowledgments **xi**

Chapter 1 Introduction 1

About This Book 1
Project Management Process Groups 2
Project Management Knowledge Areas 4

Chapter 2 Key Concepts 7

Projects, Programs, and Portfolios 7
Project Life Cycles 8
Progressive Elaboration 9
Tailoring 9
Project Management Plan and Project Documents 10
Enterprise Environmental Factors 11
Organizational Process Assets 12

Chapter 3 Initiating a Project 15

Initiating Process Group 15
Project Sponsor Role 15
Project Manager Role 16
Develop Project Charter 17
Identify Stakeholders 20

Chapter 4 Planning Scope 25

Planning Process Group 25
Planning Loops 27
Project Scope Management 27
Collect Requirements 28
Define Scope 33
Create WBS 36

Chapter 5 Planning the Schedule 43

Project Time Management 43
Define Activities 44

Sequence Activities 47
Estimate Activity Resources 52
Estimate Activity Durations 54
Develop Schedule 59

Chapter 6 Planning Cost 67

Project Cost Management 67
Estimate Costs 68
Determine Budget 74

Chapter 7 Planning Quality 77

Project Quality Management 77
Plan Quality 79

Chapter 8 Planning Human Resources 85

Project Human Resource Management 85
Develop Human Resource Plan 86

Chapter 9 Planning Communications 91

Project Communications Management 91
Plan Communications 91

Chapter 10 Planning Risk 95

Project Risk Management 95
Plan Risk Management 96
Identify Risks 101
Perform Qualitative Risk Analysis 105
Perform Quantitative Risk Analysis 108
Plan Risk Responses 111

Chapter 11 Planning Procurement 117

Project Procurement Management 117
Plan Procurements 118

Chapter 12 Planning Integration 125

Project Integration Management 125
Develop Project Management Plan 126

Chapter 13 Executing Quality Management 129

Executing Process Group 129
Perform Quality Assurance 130

Chapter 14 Executing Human Resource Management 133

Acquire Project Team 133
Develop Project Team 135
Manage Project Team 140

Chapter 15 Executing Communications Management 147

Distribute Information 147
Manage Stakeholder Expectations 149

Chapter 16 Executing Procurement Management 153
Conduct Procurements 153

Chapter 17 Executing the Project 157
Direct and Manage Project Execution 157

Chapter 18 Monitoring and Controlling Scope 161
Monitoring and Controlling Process Group 161
Verify Scope 162
Control Scope 163

Chapter 19 Monitoring and Controlling the Schedule 167
Control Schedule 167

Chapter 20 Monitoring and Controlling Cost 171
Control Costs 171

Chapter 21 Monitoring and Controlling Quality 181
Perform Quality Control 181

Chapter 22 Monitoring and Controlling Communications 187
Report Performance 187

Chapter 23 Monitoring and Controlling Risk 191
Monitor and Control Risks 191

Chapter 24 Monitoring and Controlling Procurement 195
Administer Procurements 195

Chapter 25 Monitoring and Controlling the Overall Project 199
Monitor and Control Project Work 199
Perform Integrated Change Control 200

Chapter 26 Closing the Project 207
Closing Process Group 207
Close Procurements 207
Close Project or Phase 209

Index 213

Preface

This book is designed to help make the *Guide to the Project Management Body of Knowledge* (*PMBOK® Guide*)—Fourth Edition more accessible to project managers.

It presents information from the *PMBOK® Guide*—Fourth Edition in easily understandable language, and it describes how to apply the various tools and techniques. In short, it makes the *PMBOK® Guide* easier to understand and helps you implement the practices described in the *PMBOK® Guide*.

The information in this book is based solely on information from the *PMBOK® Guide*—Fourth Edition.[1] Therefore, you will find identical definitions and many of the same tables and figures. Thus, we will not footnote each reference to the *PMBOK® Guide* because, as we have stated, that is the sole source for content.

We have included some sections of forms that show how you can use a form or template to record the information in a specific document. These forms can be found in *The Project Manager's Book of Forms*,[2] published by PMI and Wiley. Again, since this is the sole source for forms; we will not footnote each reference.

To help make this book easier to read, we are using various icons, tables, data flow diagrams, and call-out boxes. For instance, when we use a definition from the *PMBOK® Guide* we have inserted a dictionary icon. At the beginning of each process we describe the process and then show a data flow diagram from the *PMBOK® Guide* so you can see how information flows through the process, where it comes from, and where it goes. Call-out boxes may be used to list elements of a particular document.

The information is presented by Process Group as opposed to how the *PMBOK® Guide* presents it; by Knowledge Area. Because this book is designed to assist you in managing a project we felt it would be helpful to present information more consistent with how you will apply it on a project. We hope this User's Manual helps you in delivering successful projects!

---

[1] *A Guide to the Project Management Body of Knowledge* (*PMBOK® Guide*)—Fourth Edition © 2008 Project Management Institute, 14 Campus Blvd., Newtown Square, PA 19703-3299 USA.

[2] *A Project Manager's Book of Forms: A Companion to the PMBOK® Guide*—Fourth Edition © John Wiley & Sons, Inc., 111 River Street, Hoboken, NJ 07030 USA.

Acknowledgments

There are many people that help get a book from an idea to the bound copy you are holding. I can't possibly name all of them, but I would like to thank a few individuals who have been gracious enough to help me with this book.

First, Bob Argentieri who believed that what I had to say was worth publishing. Bob has done an amazing job developing a partnership with the folks at PMI to get this book into as many hands as possible. Thank you so much! Dan Magers is my go-to guy for all my questions. Thank you, Dan. Kerstin Nasdeo keeps everything on track after it gets written. You are the queen of production!

Thank you to Elden Jones and Mark Krahn for help on some of the technical matters in configuration management and quality techniques. I really appreciate the feedback Jim Pennypacker provided after reading the draft. Your perspective is valuable. Becky Clark was helpful in organizing and formatting the initial draft. I always appreciate the help you give me.

And finally, thank you to the folks at PMI in the Standards and Publications departments. John Zlockie has a wealth of information about standards. Kristen Vitello is a wonderful resource and friend. Your willingness to do what it takes to get things done and your sly wit are delightful. The folks in publishing, Donn Greenberg, Barbara Walsh, and Roberta Storer, are amazing professionals. I am so happy I got to work with you all.

Chapter 1

Introduction

TOPICS COVERED

About This Book

Project Management Process Groups

Project Management Knowledge Areas

About This Book

This book is designed to help make *A Guide to the Project Management Body of Knowledge* (*PMBOK® Guide*)—Fourth Edition more accessible to project managers. The *PMBOK® Guide* is a standard, therefore it defines **what** is considered to be a good practice on most projects most of the time. Notice it does not define *best* practices, it defines *good* practices. Best practices tend to be industry and organization specific. Because the *PMBOK® Guide* is a standard it is not descriptive. In other words, it doesn't tell you **how** to implement those practices, it merely identifies them.

The *PMBOK® Guide* also promotes a common vocabulary for project management, thereby enabling effective communication about project management between project managers, their sponsors, and their team members.

Many project managers, PMOs, and organizations mistake the *PMBOK® Guide* as a project management methodology. It is not. A project management methodology is a set of practices, policies, procedures, guidelines, tools, techniques, etc. that are used to manage projects. This book is not a methodology. This book takes the information in the *PMBOK® Guide* and describes it in easily understandable language and explains how to apply the various tools and techniques. In short, it makes the *PMBOK® Guide* easier to understand and helps you implement the practices described therein.

The information in this book is based solely on information from the *PMBOK® Guide*—Fourth Edition. Therefore you will find identical definitions and some of the same tables and figures.

To help make this book easier to read we are using various features such as definitions, examples, tips, and sample forms. At the beginning of each process we describe the process and then show a data flow diagram from the *PMBOK® Guide* so you can see how information flows through the process, where it comes from, and where it goes to next. We have presented the inputs, tools and techniques, and outputs in a table at the appropriate place in the discussion for each of the processes. In some instances, we provide a list of elements typically found in a particular document. Sometimes we include sections of forms that show how you can use a form or template to record the information in the document. These forms can be found in *The Project Manager's Book of Forms*, published by PMI and John Wiley & Sons.

Project Management Process Groups

The project management standard is presented as 42 discrete processes. A process is a set of interrelated actions and activities performed to achieve a pre-specified product, result, or service. Processes are comprised of inputs, tools and techniques, and outputs. Therefore, this book will follow that structure of presenting a process and then discussing the individual inputs, tools and techniques, and outputs that comprise the process.

Input. Any item, whether internal or external to the project, that is required by a process before that process proceeds. May be an output from a predecessor process.
Tool. Something tangible, such as a template or software program, used in performing an activity to produce a product or result.
Technique. A defined systematic procedure employed by a human resource to perform an activity to produce a product or result or deliver a service, and that may employ one or more tools.
Output. A product, result, or service generated by a process. May be an input to a successor process.

To facilitate understanding of the processes, PMI has identified five Process Groups. These groups are: Initiating Process Group, Planning Process Group, Executing Process Group, Monitoring and Controlling Process Group, and the Closing Process Group.

Initiating Process Group. Those processes performed to define a new project or new phase of an existing project by obtaining authorization to start the project or phase.
Planning Process Group. Those processes required to establish the scope of the project, refine the objectives, and define the course of action required to attain the objectives that the project was undertaken to achieve.

Executing Process Group. Those processes performed to complete the work defined in the project management plan to satisfy the project specifications.

Monitoring and Controlling Process Group. Those processes required to track, review, and regulate the progress and performance of the project; identify any areas in which changes to the plan are required; and initiate the corresponding changes.

Closing Process Group. Those processes performed to finalize all activities across all process groups to formally close the project or phase.

Note in the following figure how the Process Groups interact with each other in each phase of the project and for the project overall. The processes in the Initiating Process Group are used to identify the high-level definition of the project or phase and obtain authorization to proceed. Once this is accomplished the high-level information can be further elaborated in the Planning Process Group. Of course, we don't only plan at the start of the project. We spend much of the first part of our project planning, but as we get into the Executing Process Group, where we are actually creating and developing the work of the project, we will need to plan in finer levels of detail and re-plan when things do not go as expected. In fact, the Monitoring and Controlling Process Group is used to compare our planned progress to our actual progress. If the two are acceptably consistent, we continue on with the project work. If they are not, we will need to plan corrective or preventive actions to get our performance aligned with our plan. Finally, we will use the Closing Process Group to finalize the work and archive the phase or project information.

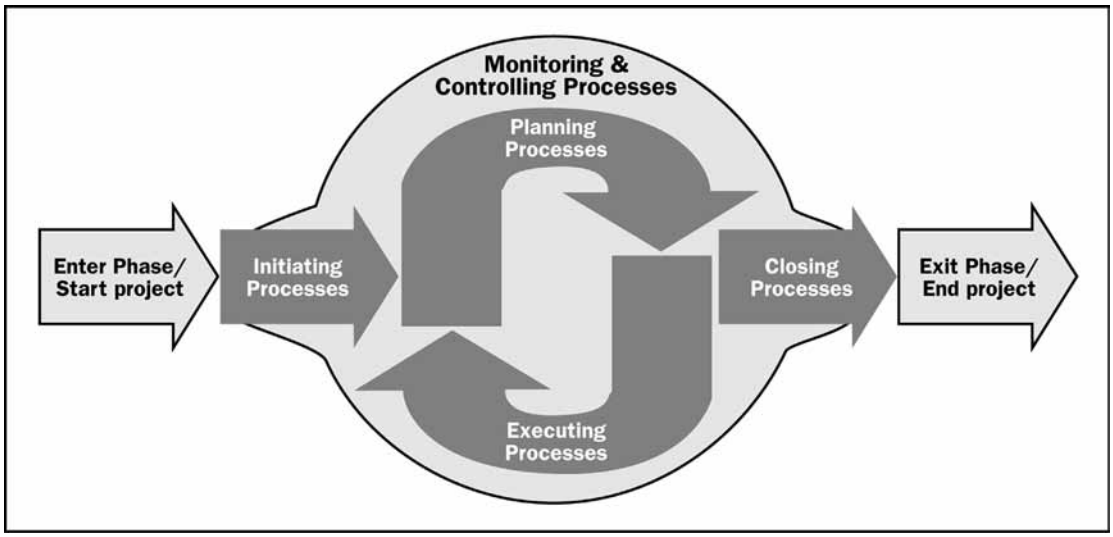

Figure 1-1
Project Management Process Groups Source: *PMBOK® Guide*—Fourth Edition, page 40.

Project Management Knowledge Areas

Another way to categorize the project management processes is by Knowledge Area. PMI identifies nine Knowledge Areas:

- Project Integration Management
- Project Scope Management
- Project Time Management
- Project Cost Management
- Project Quality Management
- Project Human Resource Management
- Project Communications Management
- Project Risk Management
- Project Procurement Management

The following figure shows how each of the 42 project management processes aligns with the Project Management Process Groups and the Project Management Knowledge Areas.

This book will use the Process Groups rather than the Knowledge Areas to present information. In Chapter 2 we will review some of the key concepts in project management; then in Chapter 3 we will discuss the Initiating Processes. The next several chapters will discuss the Planning Processes. This will be followed by chapters on the Executing Processes, Monitoring and Controlling Processes, and finally, the Closing Processes.

Knowledge Areas	Project Management Process Groups				
	Initiating Process Group	Planning Process Group	Executing Process Group	Monitoring & Controlling Process Group	Closing Process Group
4. Project Integration Management	4.1 Develop Project Charter	4.2 Develop Project Management Plan	4.3 Direct and Manage Project Execution	4.4 Monitor and Control Project Work 4.5 Perform Integrated Change Control	4.6 Close Project or Phase
5. Project Scope Management		5.1 Collect Requirements 5.2 Define Scope 5.3 Create WBS		5.4 Verify Scope 5.5 Control Scope	
6. Project Time Management		6.1 Define Activities 6.2 Sequence Activities 6.3 Estimate Activity Resources 6.4 Estimate Activity Durations 6.5 Develop Schedule		6.6 Control Schedule	
7. Project Cost Management		7.1 Estimate Costs 7.2 Determine Budget		7.3 Control Costs	
8. Project Quality Management		8.1 Plan Quality	8.2 Perform Quality Assurance	8.3 Perform Quality Control	
9. Project Human Resource Management		9.1 Develop Human Resource Plan	9.2 Acquire Project Team 9.3 Develop Project Team 9.4 Manage Project Team		
10. Project Communications Management	10.1 Identify Stakeholders	10.2 Plan Communications	10.3 Distribute Information 10.4 Manage Stakeholder Expectations	10.5 Report Performance	
11. Project Risk Management		11.1 Plan Risk Management 11.2 Identify Risks 11.3 Perform Qualitative Risk Analysis 11.4 Perform Quantitative Risk Analysis 11.5 Plan Risk Responses		11.6 Monitor and Control Risks	
12. Project Procurement Management		12.1 Plan Procurements	12.2 Conduct Procurements	12.3 Administer Procurements	12.4 Close Procurements

Figure 1-2
Project Management Process Groups and Knowledge Areas Mapping Source: *PMBOK® Guide*—Fourth Edition, page 43.

Project Integration Management includes the processes and activities needed to identify, define, combine, unify and coordinate the various processes and project management activities within the Project Management Process Groups.

Project Scope Management includes the processes required to ensure that the project includes all the work required, and only the work required, to complete the project successfully.

Project Time Management includes the processes required to manage the timely completion of a project.

Project Cost Management includes the processes involved in estimating, budgeting, and controlling costs so that the project can be completed within the approved budget.

Project Quality Management includes the processes and activities of the performing organization that determine quality policies, objectives, and responsibilities so that the project will satisfy the needs for which it was undertaken.

Project Human Resource Management includes the processes that organize and manage the project team.

Project Communications Management includes the processes required to ensure timely and appropriate generation, collection, distribution, storage, retrieval, and ultimate disposition of project information.

Project Risk Management includes the processes concerned with conducting risk management planning, identification, analysis, responses, and monitoring and control on a project.

Project Procurement Management includes the processes to purchase or acquire the products, services, or results needed to form outside the project team to perform the work.

Chapter 2

Key Concepts

TOPICS COVERED

Projects, Programs, and Portfolios

Project Life Cycles

Progressive Elaboration

Tailoring

Project Management Plan and Project Documents

Enterprise Environmental Factors

Organizational Process Assets

Projects, Programs, and Portfolios

The difference between a project and a program can sometimes be fuzzy. And the difference between a program and a portfolio of projects can also be confusing. Let's start by looking at definitions for these words and then explore some additional key concepts in project management.

Project. A temporary endeavor undertaken to create a unique product, service, or result.

Program. A group of related projects managed in a coordinated way to obtain benefits and control not available from managing them individually. Programs may include elements of related work outside the scope of the discrete projects in the program.

Portfolio. A collection of projects or programs and other work that are grouped together to facilitate effective management of that work to meet strategic business objectives. The projects or programs of the portfolio may not necessarily be interdependent or directly related.

Some people consider a program to be a jumbo-sized project. While this can be the case, it is not always true. For example, the Olympic Games could be considered a very large project with many subprojects. However, because of the size, cost, duration, and the sheer number of projects it takes to produce the Olympic Games, it is more like a collection of projects that is managed in a coordinated fashion—in other words, a program. Many of the projects are construction-related, many are production-related, many are related to press and broadcast, some are technology specific, and still others are about cultural events.

Within the program of the Olympic Games, you could even consider all the construction projects as a portfolio of projects. For the 2012 London Olympic Games, they are grouped together under the Olympic Delivery Authority (ODA) to facilitate effective management. Another portfolio could be considered the projects of the LOCOG. LOCOG is the London Organizing Committee for the Olympic Games. They are responsible for staging the Olympic and Paralympic Games.

Another way to look at the Olympic Games is having a portfolio for ODA, for the Olympics and another for the Paralympics. So you can see that much of the way you organize projects, programs, and portfolios is subjective. You can have programs with projects and portfolios of projects. You can also have portfolios with projects and programs made up of many projects. The main differentiator is that projects are always temporary, while programs and portfolios may have one or more elements that entail ongoing operations.

Project Life Cycles

Most large projects have a defined project life cycle made up of phases.

Project Life Cycle. A collection of generally sequential project phases whose name and number are determined by the control needs of the organization or organizations involved in the project.

Project Phase. A collection of logically related project activities, usually culminating in the completion of a major deliverable. Project phases are mainly completed sequentially, but can overlap in some project situations. A project phase is a component of a project life cycle. A project phase is not a Project Management Process Group.

There can be some confusion about the difference between a project life cycle and the Project Management Process Groups. Remember, the Process Groups are: Initiating, Planning, Executing, Monitoring and Controlling, and Closing. While these appear to be sequential, and could be mistaken for phases, they are groups of processes that are applied iteratively and as needed throughout the project. In some cases, the Project Management Process Groups

are applied to each phase in a project. For example, a construction project might have three phases: design, procure, construct. An IT project might have phases such as: requirements, planning, design, detail design, build, test, deploy. Each phase is completed sequentially. The needs of the performing organization(s) and the project will determine the number and the names of the phases.

Many organizations use the end of a project phase to review the progress on the project. This gives the project manager, the sponsor, and the customer the opportunity to review the charter, the progress, and deliverables to determine if the project should continue, if the approach should change, or if the project should be cancelled. There are times when the need for the project is no longer valid. Circumstances or market forces may have changed, or the duration and cost of the project may no longer justify the expenditure of resources. The end of a phase (sometimes known as a phase gate or kill point) is often the right time to make those decisions.

Progressive Elaboration

One of the key concepts in project management is progressive elaboration.

Progressive Elaboration. Continuously improving and detailing a plan as more detailed and specific information and more accurate estimates become available as the project progresses, and thereby producing more accurate and complete plans that result from the successive iterations of the project.

One of the common laments of project managers is that customers and sponsors want accurate estimates in the beginning of a project, before the scope is even fully defined. The concept of progressive elaboration clearly articulates that we can't have detailed estimates until we have detailed and specific information about the project scope. As we progress in the project we can develop more accurate and complete information.

Tailoring

Projects, by their nature, are unique. Therefore, not all projects will use all processes defined in the *PMBOK® Guide*. Tailoring means that the project manager and the project team should carefully determine which processes are appropriate for their project, which outputs are appropriate, and the degree of rigor that should be applied when using the various tools and techniques. Some will use more robust processes, some will use less robust processes. It is up to the project manager and his or her team to determine the appropriate approach for the individual project.

Project Management Plan and Project Documents

Project Management Plan. A formal, approved document that defines how the project is executed, monitored, and controlled. It may be summary or detailed and may be composed of one or more subsidiary management plans and other planning documents.

Not all documents that are generated during the project are part of the project management plan. The project management plan is primarily made up of subsidiary management plans, such as the risk management plan and the quality management plan, along with the project baselines, such as the cost and schedule baselines.

There are many other project documents used to facilitate planning and management. These can include assumption logs, the risk register, resource calendars, etc. These are all documents that assist in the management of the project, but are not part of the project management plan. The following figure lists the elements of the project management plan and lists some of the more common project documents.

Project Management Plan	Project Documents	
Change management plan	Activity attributes	Quality metrics
Communications management plan	Activity cost estimates	Responsibility assignment matrix
Configuration management plan	Activity list	Requirements traceability matrix
Cost management plan	Assumption log	Resource breakdown structure
Cost performance baseline	Basis of estimates	Resource calendars
Human resources plan	Change log	Resource requirements
Process improvement plan	Charter	Risk register
Procurement management plan	Contracts	Roles and responsibilities
Quality management plan	Duration estimates	Sellers list
Requirements management plan	Forecasts	Source selection criteria
Risk management plan	Issue log	Stakeholder analysis
Schedule baseline	Milestone list	Stakeholder management strategy
Schedule management plan	Performance reports	Stakeholder register
Scope baseline	Project funding requirements	Stakeholder requirements
Scope statement	Proposals	Statement of work
WBS	Procurement documents	Teaming agreements
WBS dictionary	Project organizational structure	Team performance assessments
Scope management plan	Quality control measurements	Work performance information
	Quality checklists	Work performance measurements

Figure 2-1
Differentiation between the Project Management Plan and Project Documents Source: *PMBOK® Guide*—Fourth Edition, page 350.